

### **REMARKS**

This is in response to the Final Office Action dated October 5, 2009. Applicant has amended the application as set forth above. All the features of the amended claims are fully supported by the originally filed application. Thus, the amendments do not add new matter to the application. Upon the entry of the amendments, claims 1, 3, and 6-14 are pending in this application. Applicant respectfully requests the entry of the amendments and reconsideration of the application.

#### **Claim Rejections under 35 U.S.C. §103**

The Examiner rejected Claims 1 and 4 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6391804 to Grant et al in view of U.S. Patent Application No. 2005/0268567 to Devine et al.; Claims 7 and 8 over Grant in view of Devine and in further view of U.S. Patent No. 6501191 to Tanaka et al.; Claims 9 and 10 over Grant in view of Devine and in further view of U.S. Patent No. 6133152 to Bierman et al.; Claim 12 over Grant in view of Devine and in further view of U.S. Patent Application No. 2006/0057799 to Horiguchi et al.; Claims 1, 3-6, 8, 11, and 13 over U.S. Patent No. 6143079 to Halpin in view of Grant and Devine; Claim 7 over Halpin in view of Grant and Devine and in further view of Tanaka; Claims 9, 10, and 14 over Halpin in view of Grant and Devine and in further view of Bierman; and Claim 12 over Halpin in view of Grant and Devine and in further view of Horiguchi.

Applicant respectfully disagrees with the Examiner. However, Applicant has amended Claim 1 with the limitations of the original Claim 5 to clarify the inventive points of the independent claim.

#### **Claim 1 of the Instant Application (*Emphasis added*)**

A rapid thermal processing system, comprising:

a chamber provided at a lateral wall of the chamber with one or more processing gas injection ports and at the opposite lateral wall thereof with one or more processing gas exhaust ports;

a heat source installed in the chamber for heating a wafer;

a quartz window mounted on the chamber such that the quartz window can be located below the heat source, wherein the outer peripheral surface of the quartz window consists of a combination of a tilt surface, a perpendicular surface, and a round surface;

an edge ring-support installed in the chamber such that edge ring-support can be located below the quartz window; and

an edge ring equipped on the edge ring-support for mounting the wafer, wherein the chamber has an inner surface with a cross-section in a multi-line shape consisting of a plurality of arcs separated from each other and having the same radii and relative centers and a plurality of straight lines connecting the arcs to each other, wherein each of the arcs has a central angle of 15-50°,

wherein the quartz window has an area larger than that of the inner surface of the chamber, and a square shape having edges, each opposing the straight line portion of the inner surface of the chamber while being positioned at the outside of the straight line portion; and

wherein the rapid thermal processing system further comprises one or more cooling water jackets, each being installed in the chamber such that the cooling water jacket is positioned at a lower portion of a region defined by the edge of the quartz window and the straight line portion of the inner surface of the chamber.

The present invention is directed to a rapid thermal processing system, which comprises an inner surface of a chamber defined by arcs and straight lines, a quartz window, and one or more cooling water jackets, each of which being installed in the chamber such that the cooling water jacket is positioned at a lower portion of a region defined by the edge of the quartz window and the straight line portion of the inner surface of the chamber. (See Figs. 3, 6, and 7; page 11, lines 6-16).

The Examiner stated in regards to Claim 5 “*Halpin further teaches a system further comprising walls that are cooled by forced air or liquid cooling across outer, lower surfaces of the quartz windows (See Halpin, 50 and 60 Figure 2) or in through-holes bored through said windows to cool the straight line portion of the inner surface of the chamber (See Halpin, Column 13, lines 49-65 and 48 and 58 Figure 2), i.e., one or more cooling water jackets, each being installed in the chamber such that the cooling water jacket can be positioned at a lower portion of a region defined by the edge of the quartz window and the stright line portion of the inner surface of the chamber.*”

Applicant respectfully disagrees with the Examiner.

Applicant respectfully submits that the cooling water jacket (810) is installed in the chamber (100) to be positioned at a lower portion of the region (210). (See Figs. 3 and 8; pages 11, lines 6-16)

The cooling water jacket (810) of the present invention is NOT installed in the quartz window or wall, BUT in the chamber (100), in order to cool the quartz window (200) and prevent it from being broken. The spatial relationship between the quartz window (200), the chamber (100), and the cooling water jacket (810) can be deduced from Figs. 3, 4, and 8.

In contrast, Halpin discloses that the cooling liquid can be circulated through “throughbores” running parallel to the wall surfaces of the quartz walls. Further, Halpin’s main disclosure for cooling issue is the shape of the upper and lower walls having varying thickness.

Therefore, Applicant respectfully submits that Halpin does *not* teach or suggest the cooling water jackets (810) of the present invention. These deficiencies of Halpin, Grant, and Devine are not cured by any of the other cited references. Applicant respectfully requests withdrawal of the rejection of the amended Claim 1.

Conclusion

In view of the amendments and remarks made above, it is respectfully submitted that claims 1, 3, 6-14 are in condition for allowance, and such action is respectfully solicited, if required, under *the Examiner's Amendment*. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to contact the undersigned attorney at the number listed below.

Respectfully submitted,

Date: January 5, 2010

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